



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,268	07/31/2001	Sean Mountcastle	CISCP696	5701
26541	7590	03/17/2005	EXAMINER	
RITTER, LANG & KAPLAN 12930 SARATOGA AE. SUITE D1 SARATOGA, CA 95070			ROBERTS, BRIAN S	
			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s) ⁴	
	09/920,268	MOUNTCASTLE, SEAN	
	Examiner	Art Unit	
	Brian Roberts	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>31 July 2001</u> . | 6) <input type="checkbox"/> Other: _____ |

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings are not legible. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 5-7, 9-12, 14, 15, 22, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Hardwick et al.

4. In reference to claim 1,2,4 and 5, Hardwick et al. teach a method that partitions a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements (abstract, column 23 lines 14-19) (claims 4, 5 – network element that is used to transmits data is a switch).

A memory management system for managing the memory (column 34 lines 7-60) (claim 1, 2 - providing a virtual network manager that manages a resource – memory -- of the network element);

The management system allows “for a percentage of total heap space to be provisioned as the maximum amount of memory which the VR and its subcomponents can obtain.” (column 34 lines 19-21) (claim 1 - allocating a portion of the resources of the network element to one of the plurality of virtual network elements);

“When a VR attempts to allocate an amount of memory which would exceed the maximum allowed, it will be denied.” (column 34 lines 37-39) (claim 1 - permitting the one of the plurality of virtual network elements to utilize only the portion of the resource of the network element that has been allocated to the one of the plurality of virtual network elements)

5. In reference to claim 6, 7, 9-12, 14, and 15, Hardwick et al. teach a network element that transmits data in a network (e.g. a switch) (abstract, column 23 lines 14-19) (claims 9, 10, 14, 15 - network element that transmits data: switch) that includes:

The network element containing memory (column 34 lines 7-60) (claims 6, 7, 11, 12 – a resource: memory);

A memory management system (column 34 lines 7-60) (claims 6, 11 - a virtual network element manager that manages the resource of the network element)

The memory management system allocates the memory to the virtual network elements and only allows use of the allocated portion by the virtual network element.

Art Unit: 2662

(column 34 lines 7-30) (claims 6, 11 – a virtual network element that is allocated a portion of the resource of the network element and is permitted to utilize only the portion of the resource of the network element that has been allocated to the virtual network element.)

6. In reference to claim 22, 25, Hardwick et al. teach a method that partitions a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements (abstract and column 23 lines 14-19) that includes:

A management system that inherently receives input when allocating the memory for the virtual switches (column 34 lines 7-60) (claims 22, 25 - receiving input as to a portion of at least one resource of the network element to allocate to one of the plurality of virtual network elements: memory);

The management system allows “for a percentage of total heap space to be provisioned as the maximum amount of memory which the VR and its subcomponents can obtain.” (column 34 lines 19-21) (claim 22 - allocating the portion of the network element to the one of the plurality of virtual network elements);

“When a VR attempts to allocate an amount of memory which would exceed the maximum allowed, it will be denied.” (column 34 lines 37-39) (claim 22 - permitting the one of the plurality of virtual network elements to utilize only the portion of the at least one resource of the network element that has been allocated to the one of the plurality of virtual network elements)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3, 8, 13, 16-21 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardwick et al. in view of Rao et al.

9. In reference to claims 3, 8, 13, and 16-21, Hardwick et al. teach a system that partitions a switch into virtual switches (abstract, column 23 lines 14-19) (claims 17, 19, 21 – network element is a switch), allocates a portion of the data ports and memory to each virtual switch based on input, manages the allocated portion for each virtual switch, and permits utilizing only the allocated portions assigned to each virtual network element (column 34 lines 7-60, column 24 lines 3-8) (claims 16, 18, 20).

Hardwick et al. does not teach a system that allocates a portion of the processor time to each virtual switch and manages the allocated portion for each virtual switch.

Rao et al. teach a system that allocates a portion of the resources to each virtual network element and manages the allocated portion for each virtual network element so that each virtual network element can only use the assigned portion (abstract, column 9 lines 19-23) (claims 3, 8, 13, 16, 18, 20 – processor time).

It would have been obvious to one of ordinary skill in the art at the time the invention to modify Hardwick et al. to allocate a portion of processor time to each virtual switch and manage the allocated portion for each virtual switch as taught by Rao et al. because processor time is an integral resource that affects the data transfer rate of a switch and partitioning the processor time allows for the virtual switches to be further customized as distinct network elements.

10. In reference to claims 26-28, Hardwick et al. teach a method that meets all requirements of parent claim and that partitions a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements (abstract and column 23 lines 14-19) (claims 27, 28 – the network element used to transmit data in a network is a switch). Hardwick et al. further teach a method that allocates a portion of the data ports and memory to each virtual switch based on input. (column 34 lines 7-60 and column 24 lines 3-8) (claim 26- receives input to allocate memory and ports to virtual network elements).

Hardwick et al. do not teach a method of receiving input to assign a portion of processor time to each virtual network element.

Rao et al. teach a method of allocating a percentage of resources from a pool of available resources to each virtual network element (abstract, column 9 lines 19-23, column 31 lines 41-43) (claim 26 – receive input to allocate processor time to virtual network elements).

It would have been obvious to one of ordinary skill in the art at the time the invention to modify Hardwick to receive input when allocating a portion of processor time to each virtual switch and manage the allocated portion for each virtual switch as taught by Rao et al. because processor time is an integral resource that affects the data transfer rate of a switch and receiving input when partitioning the processor time allows for the virtual switches to be further customized as distinct network elements.

11. Claims 23 and 24 are rejected under 35 U.S.C(a) as being unpatentable over Hardwick et al. Hardwick et al. teach a management system that is operatively coupled to each virtual switch, for maintaining information on an association between the plurality of data interfaces and each virtual switch (column 50 lines 27-30). Hardwick et al further teach a system where the user allocates a portion of the available memory and data ports to each virtual switch (column 34 lines 7-60, column 24 lines 3-8, column 31 lines 41-43). Hardwick et al. teach the use of software code to accommodate this event. (column 49 lines 54-67).

Hardwick et al. do not teach receiving input specifying an application binary then executing the application binary.

Hardwick et al. teach a method of allocating a portion of available memory and data ports to each virtual switch via input through software (column 49 lines 54-67, column 34 lines 7-60, column 24 lines 3-8, column 31 lines 41-43) (claims 23, 24 – receiving input specifying a application binary and executing the application binary).

It would have been obvious to one of ordinary skill in the art at the time of the invention to receive input specifying an application binary and then executing the application to allocate a portion of the resources to a plurality of virtual switches because an application binary is software that ensures runtime compatibility, since it defines the machine language, or runtime, format and allows for the partitioning of resources amongst the virtual switches.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure are Pub. No. US 2003/0051048 A1 to Watson et al., US Patent 6,434,612 to Hughes et al., and Pub. No. US 2002/0085545 A1 to Ku et al. Watson et al. pertains to the partitioning of a virtual router. Hughes et al. pertains to the management of network nodes involving virtual switches. Ku et al. pertains to a non-blocking virtual switch architecture for a data communications network.


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Roberts whose telephone number is (571) 272-3095. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2662

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BSR



HASSAN KIZOO
VISORY PATENT EXAMINER
NOLOGY CENTER 2800